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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,876	09/18/2003	Shigekazu Ohtomo	16869G-087000US	8892

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EXAMINER

CAO, ALLEN T

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/666,876

Applicant(s)

OHTOMO ET AL.

Examiner

Allen T. Cao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 7-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-18 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/18/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

1. Applicant's election of Group I, claims 1-6 in the reply filed on 6/27/05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 7-18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected claims, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 6/27/05.
3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al (US. 2004/0037012 A1) in view of Kamijima (US. 2003/0099054 A1).

Nakanishi et al (particularly, figure 5) discloses a recording/reproducing separated type magnetic head having a reproducing head having a reproducing element 7, the MR element 7 being disposed by way of an lower gap film (typically a read gap film is made of insulation layer) formed between a lower magnetic shield 2 disposed on a substrate 1 and an upper magnetic shield 3; and a recording head including a lower magnetic pole 24 disposed adjacent to the read head and formed with a protrusion 26 at one end of the lower magnetic pole, an upper pole (12, 27) disposed by way of a gap layer ([0048], line 12) at one end portion including the protrusion 26, the upper pole being connected with the lower pole on the side opposite to the magnetic

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gap ([0048], lines 1-8; and figures 2-3 and 6-7), and conductor coils 10 disposed by way of another insulating layer ([0048], line 13 or layer 11) formed between the upper magnetic pole and the lower magnetic pole, as set forth in claim 1.

Nakanishi et al does not disclose that the write gap layer is a magnetic layer as recited in claim 1.

Kamijima (particularly, figure 21) discloses a recording/reproducing separated type magnetic head having a reproducing head having a reproducing element 214, the MR element 214 being disposed by way of an lower gap film formed between a lower magnetic shield 212 disposed on a substrate 210 and an upper magnetic shield 217; and a recording head including a lower magnetic pole 239 disposed adjacent to the read head, an upper pole 222 disposed by way of a gap layer, the upper pole being connected with the lower pole on the side opposite to the magnetic gap (figure 21), and conductor coils 219 disposed by way of an insulating layer (220) formed between the upper magnetic pole and the lower magnetic pole, as set forth in claim 1.

Kamijima also discloses that the write gap layer 218 is a magnetic layer (page 9, line 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to indicate the write gap layer of Nakanishi et al is a magnetic gap layer as taught by Kamijima.

The rationale is as follows: One of ordinary skill in the art would have been motivated to indicate the write gap layer of Nakanishi et al is a magnetic gap layer as taught by Kamijima as an obvious pick and choose the material of the write head through

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an obvious routine lab experimentation in order to improve the write characteristics of the write head. Additionally, it has been held to be within the general skill of a worker in the art to select a known material having different chemical bonding structures on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416 (CCPA 1960).

Regarding claim 3, figure 5 of Nakanishi et al shows that the upper magnetic pole has an upper magnetic pole front end layer (pole tip layer in figure 5) located at a portion providing the magnetic gap, an upper pole magnetic upper pole layer in contiguous with the upper magnetic layer front end layer (yoke magnetic pole layer 12 front end), and upper magnetic pole rear end layer in contiguous with the upper magnetic pole upper layer and connected to the lower magnetic pole rear end layer.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al as modified by Kamijima as applied to claim 1 above, and further in view of either Cole et al (US. 5,452,164) or Ohtomo et al (US. 6,791,795 B2).

Nakanishi et al as modified by Kamijima does not disclose a second protrusion as set forth in claim 2.

Cole et al discloses a read/write head having a lower pole layer P1 having a protrusion PT1a (figure 5 show that the pole tip PT1a is protruded from the lower pole P1) and a second protrusion PT1b is formed on one end portion including the protrusion formed on the lower pole.

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Ohtomo et al discloses a read/write head having a lower pole layer 18 having a protrusion 19 and a second protrusion 24 is formed on one end portion including the protrusion formed on the lower pole.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the lower pole including the protrusion structure of Nakanishi et al as modified by Kamijima with a second protrusion as set forth, supra as taught by either Cole et al or Ohtomo et al.

The rationale is as follows: One of ordinary skill in the art would have been motivated to provide/modify the lower pole including the protrusion structure of Nakanishi et al as modified by Kamijima with a second protrusion as set forth, supra as taught by either Cole et al or Ohtomo et al to reduce the thickness of the lower magnetic pole tip layer in order to prevent the magnetic saturation and the leakage flux, thus high recording magnetic field can be acquired; therefore, improve read characteristics of the read head.

6. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al as modified by Kamijima as applied to claim 1 above, and further in view of Cohen (US. 6,195,232 B1).

Regarding claims 4-6, Nakanishi et al as modified by Kamijima do not disclose that the conductor coils are stacked by two or more layers and each the conductor coils are connected in series at the end (claim 4); the lower layer coils are disposed between the upper magnetic pole front end and the upper magnetic pole rear end (claim 5); and

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the lower layer conductor coils are disposed between the lower magnetic front end layer and the lower magnetic pole rear end layer (claim 6).

Regarding claim 4, Cohen et al discloses a read/write merge head having an upper pole 14, a lower pole 12, two or more layer of coils (32B, 36A, 36B) and each the conductor coils are connected in series at the end (figures 1 and 3d) as set forth in claim 4.

Regarding claim 5, Cohen discloses that the lower layer conductor coils 36A (compared to the coil layers 36B) are disposed between the upper magnetic pole front end and the upper magnetic pole rear end.

Regarding claim 6, Cohen discloses that the lower layer conductor coils 32B (compared to the coil layers 36A) are disposed between the lower magnetic pole front end and the lower magnetic pole rear end; and, the upper layer conductor coils 36A (compared to the coil layers 32B) are disposed between the upper magnetic pole front end and the upper magnetic pole rear end.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the coils layer structure of Nakanishi et al as modified by Kamijima with such coils layer structure as set forth, supra as taught by Cohen.

The rationale is as follows: One of ordinary skill in the art at the time the invention was made to modify the coils layer structure of Nakanishi et al as modified by Kamijima with such coils layer structure as set forth, supra as taught by Cohen to provide more than one coil layers with shorter/smaller coil layer to reduce resistance and conductance

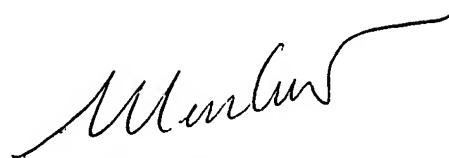
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in each coil in order to reduce thermal noise and improve high frequency channel operation.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen T. Cao whose telephone number is (571) 272-7569. The examiner can normally be reached on Mon - Thurs (7:30 - 6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Allen Cao  
Primary Examiner

AC  
September 12, 2005